



SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Baca, Manuel
Wells, James A.
Presta, Leonard G.
Lowman, Henry B.
Chen, Yvonne M.

(ii) TITLE OF INVENTION: ANTI-VEGF ANTIBODIES

(iii) NUMBER OF SEQUENCES: 131

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: Genentech, Inc.
(B) STREET: 1 DNA Way
(C) CITY: South San Francisco
(D) STATE: California
(E) COUNTRY: USA
(F) ZIP: 94080

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: 3.5 inch, 1.44 Mb floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: WinPatin (Genentech)

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: 08/908,469
(B) FILING DATE: 06-AUG-97
(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: 08/833,504
(B) FILING DATE: 07-APR-1997

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Cui, Steven X.
(B) REGISTRATION NUMBER: 44,637
(C) REFERENCE/DOCKET NUMBER: P1093P1

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: 650/225-8674
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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Gly Tyr Thr Phe Thr Asn Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17 amino acids

(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Ala Asp Phe
1 5 10 15

Lys Arg

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Tyr Pro His Tyr Tyr Gly Ser Ser His Trp Tyr Phe Asp Val
1 5 10

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 11 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Ser Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Phe Thr Ser Ser Leu His Ser
1 5

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Gln Gln Tyr Ser Thr Val Pro Trp Thr
1 5

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 123 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | 1 | 5 | 10 | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr | 20 | 25 | 30 | |
| Asn | Tyr | Gly | Met | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | 35 | 40 | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | 50 | 55 | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser | 65 | 70 | 75 | |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | 80 | 85 | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser | 95 | 100 | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | Val | Thr | 110 | 115 | 120 | |
| Val | Ser | Ser | | | | | | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 108 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | 1 | 5 | 10 | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser | 20 | 25 | 30 | |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | 35 | 40 | 45 | |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser | 50 | 55 | 60 | |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | 65 | 70 | 75 | |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | 80 | 85 | 90 | |

Tyr Ser Thr Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu
95 100 105

Ile Lys Arg

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 123 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Glu | Ile | Gln | Leu | Val | Gln | Ser | Gly | Pro | Glu | Leu | Lys | Gln | Pro | Gly | 1 | 5 | 10 | 15 |
| Glu | Thr | Val | Arg | Ile | Ser | Cys | Lys | Ala | Ser | Gly | Tyr | Thr | Phe | Thr | 20 | 25 | 30 | |
| Asn | Tyr | Gly | Met | Asn | Trp | Val | Lys | Gln | Ala | Pro | Gly | Lys | Gly | Leu | 35 | 40 | 45 | |
| Lys | Trp | Met | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | 50 | 55 | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Glu | Thr | Ser | 65 | 70 | 75 | |
| Ala | Ser | Thr | Ala | Tyr | Leu | Gln | Ile | Ser | Asn | Leu | Lys | Asn | Asp | Asp | 80 | 85 | 90 | |
| Thr | Ala | Thr | Tyr | Phe | Cys | Ala | Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser | 95 | 100 | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Ala | Gly | Thr | Thr | Val | Thr | 110 | 115 | 120 | |
| Val | Ser | Ser | | | | | | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 108 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|
| Asp | Ile | Gln | Met | Thr | Gln | Thr | Thr | Ser | Ser | Leu | Ser | Ala | Ser | Leu | 1 | 5 | 10 | 15 |
| Gly | Asp | Arg | Val | Ile | Ile | Ser | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser | 20 | 25 | 30 | |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Asp | Gly | Thr | Val | Lys | 35 | 40 | 45 | |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser | | | | |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Tyr | Ser | Leu | Thr | Ile |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Asn | Leu | Glu | Pro | Glu | Asp | Ile | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gly | Gly | Thr | Lys | Leu | Glu |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Ile | Lys | Arg | | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 113 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Phe | Thr | Phe | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Ser | Tyr | Ala | Met | Ser | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Glu | Trp | Val | Ser | Val | Ile | Ser | Gly | Asp | Gly | Gly | Ser | Thr | Tyr | Tyr |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Ala | Asp | Ser | Val | Lys | Gly | Arg | Phe | Thr | Ile | Ser | Arg | Asp | Asn | Ser |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Lys | Asn | Thr | Leu | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Arg | Gly | Phe | Asp | Tyr | Trp | Gly | Gln |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Gly | Thr | Leu | Val | Thr | Val | Ser | Ser | | | | | | | |
| | | | | 110 | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 108 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Ser | Gln | Ser | Ile | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Tyr | Leu | Ala | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Leu | Leu | Ile | Tyr | Ala | Ala | Ser | Ser | Leu | Glu | Ser | Gly | Val | Pro | Ser |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Tyr | Asn | Ser | Leu | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu |
| | | | | 95 | | | | | 100 | | | | | 105 |

Ile Lys Arg

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 107 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Leu | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu |
| | | | | 95 | | | | | 100 | | | | | 105 |

Ile Lys

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 123 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

| | | | | | | | | | | | | | | | | | | |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | 1 | 5 | 10 | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr | 20 | 25 | 30 | |
| Asn | Tyr | Gly | Met | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | 35 | 40 | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | 50 | 55 | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Ile | Ser | Arg | Asp | Asn | Ser | 65 | 70 | 75 | |
| Lys | Asn | Thr | Leu | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | 80 | 85 | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Arg | Tyr | Pro | His | Tyr | Tyr | Gly | Ser | 95 | 100 | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | Val | Thr | 110 | 115 | 120 | |
| Val Ser Ser | | | | | | | | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 107 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

| | | | | | | | | | | | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | 1 | 5 | 10 | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser | 20 | 25 | 30 | |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | 35 | 40 | 45 | |
| Leu | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser | 50 | 55 | 60 | |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Tyr | Thr | Leu | Thr | Ile | 65 | 70 | 75 | |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | 80 | 85 | 90 | |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | 95 | 100 | 105 | |
| Ile Lys | | | | | | | | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 123 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | 1 | 5 | 10 | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr | 20 | 25 | 30 | |
| Asn | Tyr | Gly | Met | Asn | Trp | Ile | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | 35 | 40 | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | 50 | 55 | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Ile | Ser | Leu | Asp | Thr | Ser | 65 | 70 | 75 | |
| Ala | Ser | Thr | Val | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | 80 | 85 | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser | 95 | 100 | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | Val | Thr | 110 | 115 | 120 | |

Val Ser Ser

(2) INFORMATION FOR SEQ ID NO:17:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 11 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

| | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|----|
| Pro | Lys | Asn | Ser | Ser | Met | Ile | Ser | Asn | Thr | Pro | 1 | 5 | 10 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|----|

(2) INFORMATION FOR SEQ ID NO:18:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 7 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|---|---|
| His | Gln | Ser | Leu | Gly | Thr | Gln | 1 | 5 |
|-----|-----|-----|-----|-----|-----|-----|---|---|

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

His Gln Asn Leu Ser Asp Gly Lys
1 5

(2) INFORMATION FOR SEQ ID NO:20:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

His Gln Asn Ile Ser Asp Gly Lys
1 5

(2) INFORMATION FOR SEQ ID NO:21:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 8 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Val Ile Ser Ser His Leu Gly Gln
1 5

(2) INFORMATION FOR SEQ ID NO:22:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 66 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

GATTTCAAAC GTCGTNYTAC TWTTTCTAGA GACAACTCCA AAAACACABY 50
TTACCTGCAG ATGAAC 66

(2) INFORMATION FOR SEQ ID NO:23:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 66 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

GATTTCAAAC GTCGTNYTAC TWTTTCTTTA GACACCTCCG CAAGCACABY 50

TTACCTGCAG ATGAAC 66

(2) INFORMATION FOR SEQ ID NO:24:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 60 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

AGCCTGCGCG CTGAGGACAC TGCCGTCTAT TACTGTDYAA RGTACCCCCA 50

CTATTATGGG 60

(2) INFORMATION FOR SEQ ID NO:25:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 30 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

CTCAGCGCGC AGGCTGTTCA TCTGCAGGTA 30

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 27 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

GCTGATATCC AGTTGACCCA GTCCCCG 27

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 27 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

TCTGGGACGG ATTAACTCT GACCATC 27

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 75 base pairs

- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

CGTTTGTCTT GTGCARYTTC TGGCTATACC TTCACCAACT ATGGTATGAA 50
CTGGRTCCGT CAGGCCCCGG GTAAG 75

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 24 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

GATATCCAGT TGACCCAGTC CCCG 24

(2) INFORMATION FOR SEQ ID NO:30:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 21 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

GCTCCGAAAG TACTGATTTA C 21

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 54 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

CGTCGTTTCA CTTTTTCTGC AGACACCTCC AGCAACACAG TATACCTGCA 50
GATG 54

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 25 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

CTATTACTGT GCAAAGTACC CCCAC 25

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 24 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

GGGACGGATT TCACTCTGAC CATC 24

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 26 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

GGTATGAACT GGGTCCGTCA GGCCCC 26

(2) INFORMATION FOR SEQ ID NO:35:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 57 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

CGTCGTTTCA CTTTTTCTTT AGACACCTCC AAAAGCACAG CATACCTGCA 50

GATGAAC 57

(2) INFORMATION FOR SEQ ID NO:36:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 53 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

GGGTCACCAT CACCTGCTAA GCATAATAAT AATAAAGCAA CTATTTAAAC 50

TGG 53

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 52 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GCGCAAGTCA GGATATTTAA TAATAATAAT AATGGTATCA ACAGAAACCA 50
GG 52

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 48 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

GTCTATTACT GTGCAAAGTA ATAACACTAA TAAGGGAGCA GCCACTGG 48

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 49 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

GGTACCCCCA CTATTATTAA TAATAATAAT GGTATTTTCA CGTCTGGGG 49

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 53 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

CACTATTATG GGAGCAGCCA CTAATAATAA TAAGTCTGGG TCAAGGAACC 50
CTG 53

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 53 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

TCCTGTGCAG CTTCTGGCTA ATAATTCTAA TAATAAGGTA TGAAGTGGGT 50
CCG 53

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 52 base pairs
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GAATGGGTTG GATGGATTAA CTAATAATAA GGTAAACCGA CCTATGCTGC 50
GG 52

(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 49 base pairs
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

CTGTGCAAAG TACCCGTAAT ATTAATAATA ATAACACTGG TATTTTCGAC 49

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 48 base pairs
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

CGTTTCACTT TTTCTTAAGA CTAATCCAAA TAAACAGCAT ACCTGCAG 48

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 46 base pairs
(B) TYPE: Nucleic Acid
(C) STRANDEDNESS: Single
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

GAATGGGTTG GATGGATTTA ATAATAATAA GGTGAACCGA CCTATG 46

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 53 base pairs

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

GGGTCACCAT CACCTGCNNS GCANNSNNSN NSNNSAGCAA CTATTTAAAC 50

TGG 53

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 52 base pairs

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

GCGCAAGTCA GGATATTNNS NNSNNSNNSN NSTGGTATCA ACAGAAACCA 50

GG 52

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 48 base pairs

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

GTCTATTACT GTGCAAAGNN SNNSCACNNS NNSGGGAGCA GCCACTGG 48

(2) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 49 base pairs

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

GGTACCCCCA CTATTATNNS NNSNNSNNST GGTATTTCTGA CGTCTGGGG 49

(2) INFORMATION FOR SEQ ID NO:50:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 54 base pairs
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

CACTATTATG GGAGCAGCCA CNNSNNSNNS NNSGTCTGGG GTCAAGGAAC 50
CCTG 54

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 53 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

TCCTGTGCAG CTTCTGGC NN SNNSTTCNNS NNSNNSGGTA TGAAGTGGGT 50
CCG 53

(2) INFORMATION FOR SEQ ID NO:52:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 52 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

GAATGGGTTG GATGGATTAA CNNSNNSNNS GGTNNSCCGA CCTATGCTGC 50
GG 52

(2) INFORMATION FOR SEQ ID NO:53:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 49 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

CTGTGCAAAG TACCCGNNST ATNNSNNSNN SNNSCACTGG TATTTGAC 49

(2) INFORMATION FOR SEQ ID NO:54:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 48 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

CGTTTCACTT TTTCTNNSGA CNNSTCCAAA NNSACAGCAT ACCTGCAG 48

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 46 base pairs
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

GAATGGGTTG GATGGATTNN SNNSNNSNNS GGTGAACCGA CCTATG 46

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 13 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Tyr Pro Tyr Tyr Arg Gly Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 13 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Tyr Pro Tyr Tyr Ile Asn Lys Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 13 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Tyr Pro Tyr Tyr Tyr Gly Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 13 amino acids
- (B) TYPE: Amino Acid

(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Tyr Pro Tyr Tyr Tyr Asn Gln Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:60:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

Tyr Pro Tyr Tyr Ile Ala Lys Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:61:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:

Tyr Pro Tyr Tyr Arg Asp Asn Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:62:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:

Tyr Pro Tyr Tyr Trp Gly Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:63:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:63:

Tyr Pro Tyr Tyr Arg Gln Asn Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:64:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:64:

Tyr Pro Tyr Tyr Arg Gln Ser Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:65:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:65:

Tyr Pro Tyr Tyr Arg Asn Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:66:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

Tyr Pro Tyr Tyr Lys Asn Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:67:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

Tyr Pro Tyr Tyr Ile Glu Arg Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:68:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

Tyr Pro Tyr Tyr Arg Asn Ala Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:69:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:69:

Tyr Pro Tyr Tyr Thr Thr Arg Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:70:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:70:

Tyr Pro Tyr Tyr Glu Gly Ser Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:71:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:71:

Tyr Pro Tyr Tyr Arg Gln Arg Gly His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:72:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

Tyr Pro Tyr Tyr Thr Gly Arg Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:73:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:

Tyr Pro Tyr Tyr Thr Asn Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:74:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:

Tyr Pro Tyr Tyr Arg Lys Gly Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:75:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75:

Tyr Pro Tyr Tyr Thr Gly Ser Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:76:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:

Tyr Pro Tyr Tyr Arg Ser Gly Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:77:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:

Tyr Pro Tyr Tyr Thr Asn Arg Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:78:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:

Tyr Pro Tyr Tyr Arg Asn Ser Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:79:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:

Tyr Pro Tyr Tyr Lys Glu Ser Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:80:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:

Tyr Pro Tyr Tyr Arg Asp Ala Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:81:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

Tyr Pro Tyr Tyr Arg Gln Lys Gly His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:82:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:

Tyr Pro Tyr Tyr Lys Gly Gly Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:83:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:

Tyr Pro Tyr Tyr Tyr Gly Ala Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:84:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:

Tyr Pro Tyr Tyr Arg Gly Glu Ser His Trp Tyr Phe Asp

1 5 10

(2) INFORMATION FOR SEQ ID NO:85:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 13 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:

Tyr Pro Tyr Tyr Arg Ser Thr Ser His Trp Tyr Phe Asp
1 5 10

(2) INFORMATION FOR SEQ ID NO:86:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:

Gly Tyr Asp Phe Thr His Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:87:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

Gly Tyr Glu Phe Gln His Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:88:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88:

Gly Tyr Glu Phe Thr His Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:89:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:89:

Gly Tyr Asp Phe Gly His Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:90:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:90:

Gly Tyr Asp Phe Ser His Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:91:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:91:

Gly Tyr Glu Phe Ser His Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:92:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:92:

Phe Ser Val Asp Val Ser Lys Ser Thr Ala
1 5 10

(2) INFORMATION FOR SEQ ID NO:93:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:93:

Phe Ser Leu Asp Lys Ser Lys Ser Thr Ala
1 5 10

(2) INFORMATION FOR SEQ ID NO:94:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:94:

Phe Ser Leu Asp Val Trp Lys Ser Thr Ala
1 5 10

(2) INFORMATION FOR SEQ ID NO:95:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:95:

Phe Ser Ile Asp Lys Ser Lys Ser Thr Ala
1 5 10

(2) INFORMATION FOR SEQ ID NO:96:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 42 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:96:

GCAAAGTACC CGTACTATTA TGGGACGAGC CACTGGTATT TC 42

(2) INFORMATION FOR SEQ ID NO:97:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 48 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:97:

GTCACCATCA CCTGCAGCGC AAGTCAGGAT ATTAGCAACT ATTTAAAC 48

(2) INFORMATION FOR SEQ ID NO:98:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 33 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:98:

CCGTACTATT ATGGGAGCAG CCACTGGTAT TTC 33

(2) INFORMATION FOR SEQ ID NO:99:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 6072 base pairs
 - (B) TYPE: Nucleic Acid
 - (C) STRANDEDNESS: Single
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:99:

GAATTCAACT TCTCCATACT TTGGATAAGG AAATACAGAC ATGAAAAATC 50
TCATTGCTGA GTTGTATTAT AAGCTTTGGA GATTATCGTC ACTGCAATGC 100
TTCGCAATAT GGCACAAAAT GACCAACAGC GGTGATTGA TCAGGTAGAG 150
GGGGCGCTGT ACGAGGTAAA GCCCGATGCC AGCATTCCTG ACGACGATAC 200
GGAGCTGCTG CGCGATTACG TAAAGAAGTT ATTGAAGCAT CCTCGTCAGT 250
AAAAAGTTAA TCTTTTCAAC AGCTGTCATA AAGTTGTCAC GGCCGAGACT 300
TATAGTCGCT TTGTTTTTAT TTTTAAATGT ATTTGTAAGT AGAATTCGAG 350
CTCGGTACCC GGGGATCCTC TAGAGGTTGA GGTGATTTTA TGAAAAAGAA 400
TATCGCATTT CTCTTGTCAT CTATGTTCTG TTTTCTATT GCTACAAACG 450
CGTACGCTGA TATCCAGTTG ACCCAGTCCC CGAGCTCCCT GTCCGCCTCT 500
GTGGGCGATA GGGTCACCAT CACCTGCAGC GCAAGTCAGG ATATTAGCAA 550
CTATTTAAAC TGGTATCAAC AGAAACCAGG AAAAGCTCCG AAACACTGA 600
TTTACTTCAC CTCCTCTCTC CACTCTGGAG TCCCTTCTCG CTTCTCTGGA 650
TCCGGTTCTG GGACGGATTA CACTCTGACC ATCAGCAGTC TGCAGCCAGA 700
AGACTTCGCA ACTTATTACT GTCAACAGTA TAGCACCGTG CCGTGGACGT 750
TTGGACAGGG TACCAAGGTG GAGATCAAAC GAACTGTGGC TGCACCATCT 800
GTCTTCATCT TCCCGCCATC TGATGAGCAG TTGAAATCTG GAACTGCTTC 850
TGTTGTGTGC CTGCTGAATA ACTTCTATCC CAGAGAGGCC AAAGTACAGT 900
GGAAGGTGGA TAACGCCCTC CAATCGGGTA ACTCCCAGGA GAGTGTACACA 950
GAGCAGGACA GCAAGGACAG CACCTACAGC CTCAGCAGCA CCCTGACGCT 1000
GAGCAAAGCA GACTACGAGA AACACAAAGT CTACGCCTGC GAAGTCACCC 1050
ATCAGGGCCT GAGCTCGCCC GTCACAAAGA GCTTCAACAG GGGAGAGTGT 1100
TAAGCTGATC CTCTACGCCG GACGCATCGT GGCCCTAGTA CGCAACTAGT 1150
CGTAAAAAGG GTATCTAGAG GTTGAGGTGA TTTTATGAAA AAGAATATCG 1200
CATTTCTTCT TGCATCTATG TTCGTTTTTT CTATTGCTAC AAACGCGTAC 1250
GCTGAGGTTC AGCTGGTGGA GTCTGGCGGT GGCCTGGTGC AGCCAGGGGG 1300
CTCACTCCGT TTGTCCTGTG CAGCTTCTGG CTATACCTTC ACCAACTATG 1350
GTATGAACTG GATCCGTCAG GCCCGGGTA AGGGCCTGGA ATGGGTGGA 1400
TGGATTAAAC CCTATACCGG TGAACCGACC TATGCTGCGG ATTTCAAACG 1450
TCGTTTTACT ATATCTGCAG ACACCTCCAG CAACACAGTT TACCTGCAGA 1500

TGAACAGCCT GCGCGCTGAG GACACTGCCG TCTATTACTG TGCAAAGTAC 1550
CCGCACTATT ATGGGAGCAG CCACTGGTAT TTCGACGTCT GGGGTCAAGG 1600
AACCCTGGTC ACCGTCTCCT CGGCCTCCAC CAAGGGCCCA TCGGTCTTCC 1650
CCCTGGCACC CTCCTCCAAG AGCACCTCTG GGGGCACAGC GGCCCTGGGC 1700
TGCCTGGTCA AGGACTACTT CCCCGAACCG GTGACGGTGT CGTGGAATC 1750
AGGCGCCCTG ACCAGCGGCG TGCACACCTT CCCGGCTGTC CTACAGTCCT 1800
CAGGACTCTA CTCCCTCAGC AGCGTGGTGA CCGTGCCCTC CAGCAGCTTG 1850
GGCACCAGCA CCTACATCTG CAACGTGAAT CACAAGCCCA GCAACACCAA 1900
GGTCGACAAG AAAGTTGAGC CCAAATCTTG TGACAAAAC CACCTCTAGA 1950
GTGGCGGTGG CTCTGGTTCC GGTGATTTTG ATTATGAAAA GATGGCAAAC 2000
GCTAATAAGG GGGCTATGAC CGAAAATGCC GATGAAAACG CGCTACAGTC 2050
TGACGCTAAA GGCAAACCTG ATTCTGTCGC TACTGATTAC GGTGCTGCTA 2100
TCGATGGTTT CATTGGTGAC GTTTCGGGCC TTGCTAATGG TAATGGTGCT 2150
ACTGGTGATT TTGCTGGCTC TAATTCCCAA ATGGCTCAAG TCGGTGACGG 2200
TGATAATTCA CCTTTAATGA ATAATTTCCG TCAATATTTA CCTTCCCTCC 2250
CTCAATCGGT TGAATGTCGC CCTTTTGTCT TTAGCGCTGG TAAACCATAT 2300
GAATTTTCTA TTGATTGTGA CAAAATAAAC TTATTCCGTG GTGTCTTTGC 2350
GTTTCTTTTA TATGTTGCCA CCTTTATGTA TGTATTTTCT ACGTTTGCTA 2400
ACATACTGCG TAATAAGGAG TCTTAATCAT GCCAGTTCTT TTGGCTAGCG 2450
CCGCCCTATA CCTTGTCTGC CTCCCCGCGT TCGGTCGCGG TGCATGGAGC 2500
CGGGCCACCT CGACCTGAAT GGAAGCCGGC GGCACCTCGC TAACGGATTC 2550
ACCACTCCAA GAATTGGAGC CAATCAATTC TTGCGGAGAA CTGTGAATGC 2600
GCAAACCAAC CCTTGGCAGA ACATATCCAT CGCGTCCGCC ATCTCCAGCA 2650
GCCGCACGCG GCGCATCTCG GGCAGCGTTG GGTCTTGGCC ACGGGTGCGC 2700
ATGATCGTGC TCCTGTCGTT GAGGACCCGG CTAGGCTGGC GGGGTTGCCT 2750
TACTGGTTAG CAGAATGAAT CACCGATACG CGAGCGAACG TGAAGCGACT 2800
GCTGCTGCAA AACGTCTGCG ACCTGAGCAA CAACATGAAT GGTCTTCGGT 2850
TTCCGTGTTT CGTAAAGTCT GGAAACGCGG AAGTCAGCGC CCTGCACCAT 2900
TATGTTCCGG ATCTGCATCG CAGGATGCTG CTGGCTACCC TGTGGAACAC 2950
CTACATCTGT ATTAACGAAG CGCTGGCATT GACCCTGAGT GATTTTTCTC 3000
TGGTCCCGCC GCATCCATAC CGCCAGTTGT TTACCCTCAC AACGTTCCAG 3050

TAACCGGGCA TGTTCATCAT CAGTAACCCG TATCGTGAGC ATCCTCTCTC 3100
 GTTTCATCGG TATCATTACC CCCATGAACA GAAATTCCCC CTTACACGGA 3150
 GGCATCAAGT GACCAAACAG GAAAAAACCG CCCTTAACAT GGCCCGCTTT 3200
 ATCAGAAGCC AGACATTAAC GCTTCTGGAG AACTCAACG AGCTGGACGC 3250
 GGATGAACAG GCAGACATCT GTGAATCGCT TCACGACCAC GCTGATGAGC 3300
 TTTACCGCAG GATCCGGAAT TTGTAAACGT TAATATTTTG TTAAAATTCG 3350
 CGTTAAATTT TTGTAAATC AGCTCATTTT TTAACCAATA GGCCGAAATC 3400
 GGCAAAATCC CTTATAAATC AAAAGAATAG ACCGAGATAG GGTGAGTGT 3450
 TGTTCAGTT TGGAACAAGA GTCCACTATT AAAGAACGTG GACTCCAACG 3500
 TCAAAGGGCG AAAAACCGTC TATCAGGGCT ATGGCCCACT ACGTGAACCA 3550
 TCACCCTAAT CAAGTTTTTT GGGGTCGAGG TGCCGTAAAG CACTAAATCG 3600
 GAACCCTAAA GGGAGCCCCC GATTTAGAGC TTGACGGGGA AAGCCGGCGA 3650
 ACGTGGCGAG AAAGGAAGGG AAGAAAGCGA AAGGAGCGGG CGCTAGGGCG 3700
 CTGGCAAGTG TAGCGGTCAC GCTGCGCGTA ACCACCACAC CCGCCGCGCT 3750
 TAATGCGCCG CTACAGGGCG CGTCCGGATC CTGCCTCGCG CGTTTCGGTG 3800
 ATGACGGTGA AAACCTCTGA CACATGCAGC TCCCGGAGAC GGTCACAGCT 3850
 TGTCTGTAAG CGGATGCCGG GAGCAGACAA GCCCGTCAGG GCGCGTCAGC 3900
 GGGTGTGGC GGGTGTGGG GCGCAGCCAT GACCCAGTCA CGTAGCGATA 3950
 GCGGAGTGTA TACTGGCTTA ACTATGCGGC ATCAGAGCAG ATTGTACTGA 4000
 GAGTGCACCA TATGCGGTGT GAAATACCGC ACAGATGCGT AAGGAGAAAA 4050
 TACCGCATCA GCGGCTCTTC CGCTTCCTCG CTCACTGACT CGCTGCGCTC 4100
 GGTGTTTCGG CTGCGGCGAG CGGTATCAGC TCACTCAAAG GCGGTAATAC 4150
 GGTTATCCAC AGAATCAGGG GATAACGCAG GAAAGAACAT GTGAGCAAAA 4200
 GGCCAGCAAA AGGCCAGGAA CCGTAAAAAG GCCGCGTTGC TGGCGTTTTT 4250
 CCATAGGCTC CGCCCCCTG ACGAGCATCA CAAAATCGA CGCTCAAGTC 4300
 AGAGGTGGCG AAACCCGACA GGAATAAAA GATACCAGGC GTTTCCCCCT 4350
 GGAAGCTCCC TCGTGCGCTC TCCTGTTCCG ACCCTGCCGC TTACCGGATA 4400
 CCTGTCCGCC TTTCTCCCTT CGGGAAGCGT GGCGCTTTCT CATAGCTCAC 4450
 GCTGTAGGTA TCTCAGTTCG GTGTAGGTCG TTCGCTCCAA GCTGGGCTGT 4500
 GTGCACGAAC CCCCCGTTCA GCCCGACCGC TGCGCCTTAT CCGGTAACCTA 4550

TCGTCTTGAG TCCAACCCGG TAAGACACGA CTTATCGCCA CTGGCAGCAG 4600
 CCACTGGTAA CAGGATTAGC AGAGCGAGGT ATGTAGGCGG TGCTACAGAG 4650
 TTCTTGAAGT GGTGGCCTAA CTACGGCTAC ACTAGAAGGA CAGTATTTGG 4700
 TATCTGCGCT CTGCTGAAGC CAGTTACCTT CGGAAAAAGA GTTGGTAGCT 4750
 CTTGATCCGG CAAACAAACC ACCGCTGGTA GCGGTGGTTT TTTTGTTC 4800
 AAGCAGCAGA TTACGCGCAG AAAAAAAGGA TCTCAAGAAG ATCCTTTGAT 4850
 CTTTTCTACG GGGTCTGACG CTCAGTGGAA CGAAAACTCA CGTTAAGGGA 4900
 TTTTGGTCAT GAGATTATCA AAAAGGATCT TCACCTAGAT CCTTTTAAAT 4950
 TAAAAATGAA GTTTTAAATC AATCTAAAGT ATATATGAGT AACTTGGTC 5000
 TGACAGTTAC CAATGCTTAA TCAGTGAGGC ACCTATCTCA GCGATCTGTC 5050
 TATTTTCGTC ATCCATAGTT GCCTGACTCC CCGTCGTGTA GATAACTACG 5100
 ATACGGGAGG GCTTACCATC TGGCCCCAGT GCTGCAATGA TACCGCGAGA 5150
 CCCACGCTCA CCGGCTCCAG ATTTATCAGC AATAAACCAG CCAGCCGGAA 5200
 GGGCCGAGCG CAGAAGTGGT CCTGCAACTT TATCCGCCTC CATCCAGTCT 5250
 ATTAATTGTT GCCGGAAGC TAGAGTAAGT AGTTCGCCAG TTAATAGTTT 5300
 GCGCAACGTT GTTGCCATTG CTGCAGGCAT CGTGGTGTCA CGCTCGTCGT 5350
 TTGGTATGGC TTCATTACAG TCCGGTTCCC AACGATCAAG GCGAGTTACA 5400
 TGATCCCCCA TGTTGTGCAA AAAAGCGGTT AGCTCCTTCG GTCCTCCGAT 5450
 CGTTGTCAGA AGTAAGTTGG CCGCAGTGTT ATCACTCATG GTTATGGCAG 5500
 CACTGCATAA TTCTCTTACT GTCATGCCAT CCGTAAGATG CTTTTCTGTG 5550
 ACTGGTGAGT ACTCAACCAA GTCATTCTGA GAATAGTGTA TGCGGCGACC 5600
 GAGTTGCTCT TGGCCGGCGT CAACACGGGA TAATACCGCG CCACATAGCA 5650
 GAACTTTAAA AGTGCTCATC ATTGGAAAAC GTTCTTCGGG GCGAAAACTC 5700
 TCAAGGATCT TACCGCTGTT GAGATCCAGT TCGATGTAAC CCACTCGTGC 5750
 ACCCAACTGA TCTTCAGCAT CTTTTACTTT CACCAGCGTT TCTGGGTGAG 5800
 CAAAAACAGG AAGGCAAAAT GCCGCAAAAA AGGGAATAAG GGCGACACGG 5850
 AAATGTTGAA TACTCATACT CTTCTTTTTT CAATATTATT GAAGCATTTA 5900
 TCAGGGTTAT TGTCTCATGA GCGGATACAT ATTTGAATGT ATTTAGAAAA 5950
 ATAAACAAAT AGGGGTTCG CGCACATTTT CCCGAAAAGT GCCACCTGAC 6000
 GTCTAAGAAA CCATTATTAT CATGACATTA ACCTATAAAA ATAGGCGTAT 6050
 CACGAGGCCC TTTCGTCTTC AA 6072

(2) INFORMATION FOR SEQ ID NO:100:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 237 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:100:

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Met | Lys | Lys | Asn | Ile | Ala | Phe | Leu | Leu | Ala | Ser | Met | Phe | Val | Phe | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Ile | Ala | Thr | Asn | Ala | Tyr | Ala | Asp | Ile | Gln | Leu | Thr | Gln | Ser | |
| | | | | 20 | | | | | 25 | | | | | 30 | |
| Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | Gly | Asp | Arg | Val | Thr | Ile | Thr | |
| | | | | 35 | | | | | 40 | | | | | 45 | |
| Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser | Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | |
| | | | | 50 | | | | | 55 | | | | | 60 | |
| Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | Leu | Leu | Ile | Tyr | Phe | Thr | Ser | |
| | | | | 65 | | | | | 70 | | | | | 75 | |
| Ser | Leu | His | Ser | Gly | Val | Pro | Ser | Arg | Phe | Ser | Gly | Ser | Gly | Ser | |
| | | | | 80 | | | | | 85 | | | | | 90 | |
| Gly | Thr | Asp | Tyr | Thr | Leu | Thr | Ile | Ser | Ser | Leu | Gln | Pro | Glu | Asp | |
| | | | | 95 | | | | | 100 | | | | | 105 | |
| Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | Tyr | Ser | Thr | Val | Pro | Trp | Thr | |
| | | | | 110 | | | | | 115 | | | | | 120 | |
| Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | Ile | Lys | Arg | Thr | Val | Ala | Ala | |
| | | | | 125 | | | | | 130 | | | | | 135 | |
| Pro | Ser | Val | Phe | Ile | Phe | Pro | Pro | Ser | Asp | Glu | Gln | Leu | Lys | Ser | |
| | | | | 140 | | | | | 145 | | | | | 150 | |
| Gly | Thr | Ala | Ser | Val | Val | Cys | Leu | Leu | Asn | Asn | Phe | Tyr | Pro | Arg | |
| | | | | 155 | | | | | 160 | | | | | 165 | |
| Glu | Ala | Lys | Val | Gln | Trp | Lys | Val | Asp | Asn | Ala | Leu | Gln | Ser | Gly | |
| | | | | 170 | | | | | 175 | | | | | 180 | |
| Asn | Ser | Gln | Glu | Ser | Val | Thr | Glu | Gln | Asp | Ser | Lys | Asp | Ser | Thr | |
| | | | | 185 | | | | | 190 | | | | | 195 | |
| Tyr | Ser | Leu | Ser | Ser | Thr | Leu | Thr | Leu | Ser | Lys | Ala | Asp | Tyr | Glu | |
| | | | | 200 | | | | | 205 | | | | | 210 | |
| Lys | His | Lys | Val | Tyr | Ala | Cys | Glu | Val | Thr | His | Gln | Gly | Leu | Ser | |
| | | | | 215 | | | | | 220 | | | | | 225 | |
| Ser | Pro | Val | Thr | Lys | Ser | Phe | Asn | Arg | Gly | Glu | Cys | | | | |
| | | | | 230 | | | | | 235 | | | | | | |

(2) INFORMATION FOR SEQ ID NO:101:

- (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 110 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:101:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Leu | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Leu | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Tyr | Thr | Leu | Thr | Ile |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Ile | Lys | Arg | Thr | Val | | | | | | | | | | |
| | | | | 110 | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:102:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 118 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:102:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Gly | Met | Asn | Trp | Ile | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Ile | Ser | Ala | Asp | Thr | Ser |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Asn | Thr | Val | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | | |

110

115

(2) INFORMATION FOR SEQ ID NO:103:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 110 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:103:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Leu | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Tyr | Thr | Leu | Thr | Ile |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Ile | Lys | Arg | Thr | Val | | | | | | | | | | |
| | | | | 110 | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:104:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 118 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:104:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Gly | Met | Asn | Trp | Ile | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Ala | Asp | Thr | Ser |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Asn | Thr | Val | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp |
| | | | | 80 | | | | | 85 | | | | | 90 |

Thr Ala Val Tyr Tyr Cys Ala Lys Tyr Pro His Tyr Tyr Gly Ser
95 100 105

Ser His Trp Tyr Phe Asp Val Trp Gly Gln Gly Thr Leu
110 115

(2) INFORMATION FOR SEQ ID NO:105:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 110 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:105:

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
1 5 10 15
Gly Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp Ile Ser
20 25 30
Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
35 40 45
Val Leu Ile Tyr Phe Thr Ser Ser Leu His Ser Gly Val Pro Ser
50 55 60
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile
65 70 75
Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
80 85 90
Tyr Ser Thr Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu
95 100 105
Ile Lys Arg Thr Val
110

(2) INFORMATION FOR SEQ ID NO:106:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 118 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:106:

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
1 5 10 15
Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Tyr Thr Phe Thr
20 25 30
Asn Tyr Gly Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu
35 40 45
Glu Trp Val Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr
50 55 60

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | | |
| | | | | 110 | | | | | 115 | | | | | |

(2) INFORMATION FOR SEQ ID NO:107:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 110 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:107:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Leu | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Asn | Glu | Gln | Leu | Ser |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys |
| | | | | 35 | | | | | 40 | | | | | 45 |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser |
| | | | | 50 | | | | | 55 | | | | | 60 |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile |
| | | | | 65 | | | | | 70 | | | | | 75 |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln |
| | | | | 80 | | | | | 85 | | | | | 90 |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu |
| | | | | 95 | | | | | 100 | | | | | 105 |
| Ile | Lys | Arg | Thr | Val | | | | | | | | | | |
| | | | | 110 | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:108:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 118 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:108:

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr |
| | | | | 20 | | | | | 25 | | | | | 30 |
| Asn | Tyr | Gly | Ile | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu |

| | | | | | |
|-------------------------------------------------------------|-----|--|-----|--|-----|
| | 35 | | 40 | | 45 |
| Glu Trp Val Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr | 50 | | 55 | | 60 |
| Ala Ala Asp Phe Lys Arg Arg Phe Thr Phe Ser Leu Asp Thr Ser | 65 | | 70 | | 75 |
| Lys Ser Thr Ala Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp | 80 | | 85 | | 90 |
| Thr Ala Val Tyr Tyr Cys Ala Lys Tyr Pro His Tyr Tyr Gly Ser | 95 | | 100 | | 105 |
| Ser His Trp Tyr Phe Asp Val Trp Gly Gln Gly Thr Leu | 110 | | 115 | | |

(2) INFORMATION FOR SEQ ID NO:109:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 110 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:109:

| | | | | |
|-------------------------------------------------------------|-----|-----|-----|----|
| Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val | 1 | 5 | 10 | 15 |
| Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Asn Glu Gln Leu Ser | 20 | 25 | 30 | |
| Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys | 35 | 40 | 45 | |
| Val Leu Ile Tyr Phe Thr Ser Ser Leu His Ser Gly Val Pro Ser | 50 | 55 | 60 | |
| Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile | 65 | 70 | 75 | |
| Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln | 80 | 85 | 90 | |
| Tyr Ser Thr Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu | 95 | 100 | 105 | |
| Ile Lys Arg Thr Val | 110 | | | |

(2) INFORMATION FOR SEQ ID NO:110:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 118 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:110:

| | | | | |
|-------------------------------------------------------------|---|---|----|----|
| Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly | 1 | 5 | 10 | 15 |
|-------------------------------------------------------------|---|---|----|----|

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Asp | Phe | Thr | |
| | | | | 20 | | | | | 25 | | | | | 30 | |
| His | Tyr | Gly | Met | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | |
| | | | | 35 | | | | | 40 | | | | | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | |
| | | | | 50 | | | | | 55 | | | | | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser | |
| | | | | 65 | | | | | 70 | | | | | 75 | |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | |
| | | | | 80 | | | | | 85 | | | | | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser | |
| | | | | 95 | | | | | 100 | | | | | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | | | |
| | | | | 110 | | | | | 115 | | | | | | |

(2) INFORMATION FOR SEQ ID NO:111:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 110 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:111:

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Asp | Ile | Gln | Leu | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Asn | Glu | Gln | Leu | Ser | |
| | | | | 20 | | | | | 25 | | | | | 30 | |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | |
| | | | | 35 | | | | | 40 | | | | | 45 | |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser | |
| | | | | 50 | | | | | 55 | | | | | 60 | |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | |
| | | | | 65 | | | | | 70 | | | | | 75 | |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | |
| | | | | 80 | | | | | 85 | | | | | 90 | |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | |
| | | | | 95 | | | | | 100 | | | | | 105 | |
| Ile | Lys | Arg | Thr | Val | | | | | | | | | | | |
| | | | | 110 | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:112:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 118 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:112:

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr | |
| | | | | 20 | | | | | 25 | | | | | 30 | |
| Asn | Tyr | Gly | Ile | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | |
| | | | | 35 | | | | | 40 | | | | | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | |
| | | | | 50 | | | | | 55 | | | | | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser | |
| | | | | 65 | | | | | 70 | | | | | 75 | |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | |
| | | | | 80 | | | | | 85 | | | | | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | Tyr | Tyr | Tyr | Gly | Thr | |
| | | | | 95 | | | | | 100 | | | | | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | | | |
| | | | | 110 | | | | | 115 | | | | | | |

(2) INFORMATION FOR SEQ ID NO:113:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 110 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:113:

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Asp | Ile | Gln | Leu | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Asn | Glu | Gln | Leu | Ser | |
| | | | | 20 | | | | | 25 | | | | | 30 | |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | |
| | | | | 35 | | | | | 40 | | | | | 45 | |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser | |
| | | | | 50 | | | | | 55 | | | | | 60 | |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | |
| | | | | 65 | | | | | 70 | | | | | 75 | |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | |
| | | | | 80 | | | | | 85 | | | | | 90 | |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | |
| | | | | 95 | | | | | 100 | | | | | 105 | |
| Ile | Lys | Arg | Thr | Val | | | | | | | | | | | |
| | | | | 110 | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:114:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 118 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:114:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | 1 | 5 | 10 | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Asp | Phe | Thr | 20 | 25 | 30 | |
| His | Tyr | Gly | Met | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | 35 | 40 | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | 50 | 55 | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser | 65 | 70 | 75 | |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | 80 | 85 | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | Tyr | Tyr | Tyr | Gly | Thr | 95 | 100 | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | 110 | 115 | | | | |

(2) INFORMATION FOR SEQ ID NO:115:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 110 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:115:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|----|
| Asp | Ile | Gln | Leu | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | 1 | 5 | 10 | 15 |
| Gly | Asp | Arg | Val | Thr | Ile | Thr | Cys | Ser | Ala | Ser | Gln | Asp | Ile | Ser | 20 | 25 | 30 | |
| Asn | Tyr | Leu | Asn | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | 35 | 40 | 45 | |
| Val | Leu | Ile | Tyr | Phe | Thr | Ser | Ser | Leu | His | Ser | Gly | Val | Pro | Ser | 50 | 55 | 60 | |
| Arg | Phe | Ser | Gly | Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | 65 | 70 | 75 | |
| Ser | Ser | Leu | Gln | Pro | Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | 80 | 85 | 90 | |
| Tyr | Ser | Thr | Val | Pro | Trp | Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | 95 | 100 | 105 | |

Ile Lys Arg Thr Val
110

(2) INFORMATION FOR SEQ ID NO:116:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 118 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:116:

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Asp | Phe | Thr | |
| | | | | 20 | | | | | 25 | | | | | 30 | |
| His | Tyr | Gly | Met | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | |
| | | | | 35 | | | | | 40 | | | | | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | |
| | | | | 50 | | | | | 55 | | | | | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser | |
| | | | | 65 | | | | | 70 | | | | | 75 | |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | |
| | | | | 80 | | | | | 85 | | | | | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | Tyr | Tyr | Tyr | Gly | Thr | |
| | | | | 95 | | | | | 100 | | | | | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | | | |
| | | | | 110 | | | | | 115 | | | | | | |

(2) INFORMATION FOR SEQ ID NO:117:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 3
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 3 represents either Aspartic acid, Threonine or Glutamic acid

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 4
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 4 represents either Phenylalanine, Tryptophan or Tyrosine

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 5

(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 5 represents either Threonine, Glutamine, Glycine or Serine

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 6 is either Histidine or Asparagine

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 9
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 9 represents either Methionine or Isoleucine

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:117:

Gly Tyr Xaa Xaa Xaa Xaa Tyr Gly Xaa Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:118:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 17 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 5 represents either Tyrosine or Tryptophan

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:118:

Trp Ile Asn Thr Xaa Thr Gly Glu Pro Thr Tyr Ala Ala Asp Phe
1 5 10 15

Lys Arg

(2) INFORMATION FOR SEQ ID NO:119:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 3 represents either Histidine or Tyrosine

(ix) FEATURE:
(A) NAME/KEY: Modified-site

(B) LOCATION: 5
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 5 represents either Tyrosine, Arginine, Lysine, Isoleucine, Threonine, Glutamic acid or Tryptophan

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 6
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 6 represents either glycine, Arginine, Alanine, Aspartic acid, Glutamine, Glutamic acid, Threonine, Leucine aor Serine

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 7
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 7 represents either Serine, Threonine, Lysine, Glutamine, Asparagine, Arginine, Alanine, Glutamic acid or Glycine

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 8
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 8 represents either Serine or Glycine

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:119:

Tyr Pro Xaa Tyr Xaa Xaa Xaa Xaa His Trp Tyr Phe Asp Val
1 5 10

(2) INFORMATION FOR SEQ ID NO:120:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 1
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 1 represents either Phenylalanine, Isoleucine, Valine, Leucine or Alanine

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 3
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 3 represents either Alanine, Leucine, Valine or Isoleucine

(ix) FEATURE:
(A) NAME/KEY: Modified-site
(B) LOCATION: 5
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 5 represents either Threonine, Valine or Lysine

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 6
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 6 represents either Serine or Tryptophan

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 7
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 7 represents either Serine or Lysine

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 8
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 8 represents either Asparagine or Serine

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 10
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 10 represents either Valine, Alanine, Leucine or Isoleucine

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:120:

Xaa Ser Xaa Asp Xaa Xaa Xaa Xaa Thr Xaa
 1 5 10

(2) INFORMATION FOR SEQ ID NO:121:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 11 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 1
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 1 represents either Arginine or Serine

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 3
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 3 represents either Serine or Asparagine

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 4
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 4 represents either Glutamine or Glutamic acid

- (A) LENGTH: 108 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 4
- (C) IDENTIFICATION METHOD:
- (D) OTHER INFORMATION: Where the X at position 4 represents either Methionine or Leucine

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:124:

```

Asp Ile Gln Xaa Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val
 1             5             10             15
Gly Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp Ile Ser
                20             25             30
Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys
                35             40             45
Val Leu Ile Tyr Phe Thr Ser Ser Leu His Ser Gly Val Pro Ser
                50             55             60
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile
                65             70             75
Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln
                80             85             90
Tyr Ser Thr Val Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu
                95             100            105
Ile Lys Arg

```

(2) INFORMATION FOR SEQ ID NO:125:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 123 amino acids
- (B) TYPE: Amino Acid
- (D) TOPOLOGY: Linear

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 28
- (C) IDENTIFICATION METHOD:
- (D) OTHER INFORMATION: Where the X at position 28 represents either Threonine or Aspartic acid

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 31
- (C) IDENTIFICATION METHOD:
- (D) OTHER INFORMATION: Where the X at position 31 represents either Asparagine or Histidine

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
- (B) LOCATION: 101

(C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 101 represents either Tyrosine or Histidine

(ix) FEATURE:
 (A) NAME/KEY: Modified-site
 (B) LOCATION: 105
 (C) IDENTIFICATION METHOD:
 (D) OTHER INFORMATION: Where the X at position 105 represents either Serine or Threonine

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:125:

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | 1 | 5 | 10 | 15 |
| Gly | Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Tyr | Xaa | Phe | Thr | 20 | 25 | 30 | |
| Xaa | Tyr | Gly | Met | Asn | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | 35 | 40 | 45 | |
| Glu | Trp | Val | Gly | Trp | Ile | Asn | Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | 50 | 55 | 60 | |
| Ala | Ala | Asp | Phe | Lys | Arg | Arg | Phe | Thr | Phe | Ser | Leu | Asp | Thr | Ser | 65 | 70 | 75 | |
| Lys | Ser | Thr | Ala | Tyr | Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | 80 | 85 | 90 | |
| Thr | Ala | Val | Tyr | Tyr | Cys | Ala | Lys | Tyr | Pro | Xaa | Tyr | Tyr | Gly | Xaa | 95 | 100 | 105 | |
| Ser | His | Trp | Tyr | Phe | Asp | Val | Trp | Gly | Gln | Gly | Thr | Leu | Val | Thr | 110 | 115 | 120 | |
| Val | Ser | Ser | | | | | | | | | | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:126:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 10 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:126:

| | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|----|
| Gly | Tyr | Asp | Phe | Thr | His | Tyr | Gly | Met | Asn | 1 | 5 | 10 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|---|----|

(2) INFORMATION FOR SEQ ID NO:127:

(i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 14 amino acids
 (B) TYPE: Amino Acid
 (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:127:

Tyr Pro Tyr Tyr Tyr Gly Thr Ser His Trp Tyr Phe Asp Val
1 5 10

(2) INFORMATION FOR SEQ ID NO:128:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 3
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 3 represents either Threonine or Aspartic acid

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:128:

Gly Tyr Xaa Phe Thr Xaa Tyr Gly Met Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:129:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 3
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 3 represents either Tyrosine or Histidine

(ix) FEATURE:

- (A) NAME/KEY: Modified-site
(B) LOCATION: 7
(C) IDENTIFICATION METHOD:
(D) OTHER INFORMATION: Where the X at position 7 represents either Serine or Threonine

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:129:

Tyr Pro Xaa Tyr Tyr Gly Xaa Ser His Trp Tyr Phe Asp Val
1 5 10

(2) INFORMATION FOR SEQ ID NO:130:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 254 amino acids
(B) TYPE: Amino Acid
(D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:130:

Met Lys Lys Asn Ile Ala Phe Leu Leu Ala Ser Met Phe Val Phe
1 5 10 15

Ser Ile Ala Thr Asn Ala Tyr Ala Glu Val Gln Leu Val Glu Ser

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|--|
| | | | | 20 | | | | | | 25 | | | | | 30 | |
| Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | Gly | Ser | Leu | Arg | Leu | Ser | Cys | | |
| | | | | 35 | | | | | 40 | | | | | 45 | | |
| Ala | Ala | Ser | Gly | Tyr | Thr | Phe | Thr | Asn | Tyr | Gly | Met | Asn | Trp | Ile | | |
| | | | | 50 | | | | | 55 | | | | | 60 | | |
| Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | Glu | Trp | Val | Gly | Trp | Ile | Asn | | |
| | | | | 65 | | | | | 70 | | | | | 75 | | |
| Thr | Tyr | Thr | Gly | Glu | Pro | Thr | Tyr | Ala | Ala | Asp | Phe | Lys | Arg | Arg | | |
| | | | | 80 | | | | | 85 | | | | | 90 | | |
| Phe | Thr | Ile | Ser | Ala | Asp | Thr | Ser | Ser | Asn | Thr | Val | Tyr | Leu | Gln | | |
| | | | | 95 | | | | | 100 | | | | | 105 | | |
| Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | Thr | Ala | Val | Tyr | Tyr | Cys | Ala | | |
| | | | | 110 | | | | | 115 | | | | | 120 | | |
| Lys | Tyr | Pro | His | Tyr | Tyr | Gly | Ser | Ser | His | Trp | Tyr | Phe | Asp | Val | | |
| | | | | 125 | | | | | 130 | | | | | 135 | | |
| Trp | Gly | Gln | Gly | Thr | Leu | Val | Thr | Val | Ser | Ser | Ala | Ser | Thr | Lys | | |
| | | | | 140 | | | | | 145 | | | | | 150 | | |
| Gly | Pro | Ser | Val | Phe | Pro | Leu | Ala | Pro | Ser | Ser | Lys | Ser | Thr | Ser | | |
| | | | | 155 | | | | | 160 | | | | | 165 | | |
| Gly | Gly | Thr | Ala | Ala | Leu | Gly | Cys | Leu | Val | Lys | Asp | Tyr | Phe | Pro | | |
| | | | | 170 | | | | | 175 | | | | | 180 | | |
| Glu | Pro | Val | Thr | Val | Ser | Trp | Asn | Ser | Gly | Ala | Leu | Thr | Ser | Gly | | |
| | | | | 185 | | | | | 190 | | | | | 195 | | |
| Val | His | Thr | Phe | Pro | Ala | Val | Leu | Gln | Ser | Ser | Gly | Leu | Tyr | Ser | | |
| | | | | 200 | | | | | 205 | | | | | 210 | | |
| Leu | Ser | Ser | Val | Val | Thr | Val | Pro | Ser | Ser | Ser | Leu | Gly | Thr | Gln | | |
| | | | | 215 | | | | | 220 | | | | | 225 | | |
| Thr | Tyr | Ile | Cys | Asn | Val | Asn | His | Lys | Pro | Ser | Asn | Thr | Lys | Val | | |
| | | | | 230 | | | | | 235 | | | | | 240 | | |
| Asp | Lys | Lys | Val | Glu | Pro | Lys | Ser | Cys | Asp | Lys | Thr | His | Leu | | | |
| | | | | 245 | | | | | 250 | | | | | | | |

(2) INFORMATION FOR SEQ ID NO:131:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 158 amino acids
 - (B) TYPE: Amino Acid
 - (D) TOPOLOGY: Linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:131:

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Ser | Gly | Gly | Gly | Ser | Gly | Ser | Gly | Asp | Phe | Asp | Tyr | Glu | Lys | Met | | |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | | |
| Ala | Asn | Ala | Asn | Lys | Gly | Ala | Met | Thr | Glu | Asn | Ala | Asp | Glu | Asn | | |
| | | | | 20 | | | | 25 | | | | | | 30 | | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Leu | Gln | Ser | Asp | Ala | Lys | Gly | Lys | Leu | Asp | Ser | Val | Ala | Thr | 35 | 40 | 45 |
| Asp | Tyr | Gly | Ala | Ala | Ile | Asp | Gly | Phe | Ile | Gly | Asp | Val | Ser | Gly | 50 | 55 | 60 |
| Leu | Ala | Asn | Gly | Asn | Gly | Ala | Thr | Gly | Asp | Phe | Ala | Gly | Ser | Asn | 65 | 70 | 75 |
| Ser | Gln | Met | Ala | Gln | Val | Gly | Asp | Gly | Asp | Asn | Ser | Pro | Leu | Met | 80 | 85 | 90 |
| Asn | Asn | Phe | Arg | Gln | Tyr | Leu | Pro | Ser | Leu | Pro | Gln | Ser | Val | Glu | 95 | 100 | 105 |
| Cys | Arg | Pro | Phe | Val | Phe | Ser | Ala | Gly | Lys | Pro | Tyr | Glu | Phe | Ser | 110 | 115 | 120 |
| Ile | Asp | Cys | Asp | Lys | Ile | Asn | Leu | Phe | Arg | Gly | Val | Phe | Ala | Phe | 125 | 130 | 135 |
| Leu | Leu | Tyr | Val | Ala | Thr | Phe | Met | Tyr | Val | Phe | Ser | Thr | Phe | Ala | 140 | 145 | 150 |
| Asn | Ile | Leu | Arg | Asn | Lys | Glu | Ser | | | | | | | | 155 | | |